

WHAT IS CLAIMED IS:

1. A system for delivering hemostasis promoting material to a blood vessel puncture to facilitate hemostasis, the system comprising:

an introducer sheath having a proximal end and a distal end configured to be inserted into a blood vessel puncture;

a hydration chamber configured to receive and hydrate a pledget of hemostasis promoting material, the hydration chamber having a distal end configured to be connected to the proximal end of the introducer sheath and a proximal end configured to be connected to a syringe; and

a control tip including a tube having a first diameter and an enlarged distal tip having a second diameter larger than the first diameter, the tube configured to extend from an interior of the hydration chamber through the distal end of the hydration chamber, through the introducer, and out the distal end of the introducer.

2. The system of Claim 1, wherein the control tip has a proximal end extending through a side of the hydration chamber between the proximal and distal ends of the hydration chamber.

3. The system of Claim 1, wherein the control tip has a central lumen extending from a distal end to a proximal end of the control tip configured to receive a guidewire.

4. The system of Claim 1, wherein the enlarged distal tip of the control tip extends beyond the distal end of the introducer sheath when the distal end of the hydration chamber is engaged with the proximal end of the introducer sheath.

5. The system of Claim 1, wherein the hydration chamber has a first inner diameter, a second inner diameter, and a tapered portion between the first and second inner diameters for compressing the hemostasis promoting material.

6. The system of Claim 5, wherein the second inner diameter is substantially the same as an inner diameter of the introducer sheath.

7. The system of Claim 1, further comprising an exhaust vent in fluid connection with a distal end of the introducer sheath for providing a bleed back indication of position.

8. The system of Claim 7, wherein the exhaust vent is located at the proximal end of the introducer sheath.

9. The system of Claim 8, wherein the exhaust vent is configured to be opened and closed by at least one of a cap, a valve, and a stopcock.

10. The system of Claim 7, wherein the exhaust vent is located in the distal end of the hydration chamber.

11. The system of Claim 10, wherein the exhaust vent is configured to be opened and closed by at least one of a cap, a valve, and a stopcock.

12. The system of Claim 1, wherein the control tip is fixed to the hydration chamber.

Sub
A1
5
10
13. A system for delivering sponge material to a blood vessel puncture to facilitate hemostasis, the system comprising:
an introducer sheath having a proximal end and a distal end configured to be inserted into a blood vessel puncture;
a hydration chamber configured to received and hydrate a pledget of sponge material, the hydration chamber having a proximal end and a distal end configured to be connected to the proximal end of the introducer sheath;
a syringe connectable to the proximal end of the hydration chamber for delivering the sponge material through the sheath by fluid pressure;
and
means for preventing the injected sponge material from entering an interior of the blood vessel.

15
14. The system of Claim 13, wherein the means for preventing the injected sponge material from entering an interior of the blood vessel is a control tip including a tube having a first diameter and an enlarged distal tip having a second diameter larger than the first diameter, the tube configured to extend from an interior of the hydration chamber through the distal end of the hydration chamber, through the introducer and out the distal end of the introducer.

20
15. The system of Claim 13, wherein the second diameter of the control tip is smaller than an inner diameter of the introducer sheath.

16. A system for determining a location of a blood vessel puncture for delivery of a hemostasis promoting material to the blood vessel puncture to facilitate hemostasis, the system comprising:

an introducer sheath having a lumen, a proximal end, and a distal end configured to be inserted into a blood vessel puncture;

5 a hemostasis promoting material delivery system having a connector for forming a fluid tight connection with the proximal end of the introducer sheath; and

10 a bleed back exhaust tube having a first end in fluid communication with the lumen of the introducer sheath and a second end positioned to deliver blood to an exterior of the system to provide a visual indication of the location of the distal end of the introducer sheath, wherein the bleed back exhaust tube has an inner diameter of less than 2mm.

17. The system of Claim 16, wherein the bleed back exhaust tube is connected to the introducer sheath.

18. The system of Claim 16, wherein the bleed back exhaust tube is on the hemostasis promoting material delivery system.

15 19. The system of Claim 16, wherein the hemostasis promoting material delivery system comprises:

20 a hydration chamber configured to receive and hydrate a pledget of hemostasis promoting material, the hydration chamber having a distal end configured to be connected to the proximal end of the introducer sheath and a proximal end configured to be connected to a syringe; and

a control tip including a tube having a first diameter and an enlarged distal tip having a second diameter larger than the first diameter, the tube configured to extend from an interior of the hydration chamber through the distal

Sub
a1
end of the hydration chamber, through the introducer, and out the distal end of the introducer.

20. A method of promoting hemostasis of a blood vessel puncture, the method comprising:

5 injecting a sponge material through an introducer sheath by fluid pressure from a proximal end of the introducer sheath located outside of the body to a distal end of the introducer sheath positioned within a tissue tract extending from the skin to a puncture in a blood vessel; and

10 positioning the injected sponge material at a location outside of a lumen of the blood vessel to promote hemostasis of the blood vessel puncture.

21. The method of Claim 20, wherein the step of positioning the injected sponge material at a location outside of the lumen of the blood vessel is performed by inserting a control tip through the puncture in the blood vessel wall and at least partially into the blood vessel to control blood flow through the
15 puncture in the blood vessel wall and positioning the sponge material adjacent to an outer surface of the blood vessel wall at the puncture site with the control tip still at least part in the puncture in the blood vessel wall.

22. The method of Claim 20, wherein the sponge material is transported through the entire length of the introducer sheath by fluid pressure
20 without the use of a plunger.

23. A method of promoting hemostasis of a blood vessel puncture, the method comprising:

positioning an introducer sheath in a tissue tract extending from
the skin of a patient into a blood vessel;

performing an intravascular procedure through the introducer
sheath positioned in the tissue tract;

5 connecting a hemostasis promoting material delivery system to the
introducer sheath without removing the introducer sheath; and

delivering the hemostasis promoting material through the
introducer sheath to the tissue tract by fluid pressure.

24. The method of Claim 23, further comprising a step of
10 withdrawing the introducer sheath to place a distal end of the introducer sheath at a
delivery position within the tissue tract, wherein the step of withdrawing the
introducer is performed after connecting the hemostasis promoting material
delivery system to the introducer sheath and before delivering the hemostasis
promoting material.

15 25. The method of Claim 24, further comprising a step of providing
bleed back to determine the delivery position for the distal end of the introducer
sheath.

26. A system for delivering hemostasis promoting material to a blood
vessel puncture to facilitate hemostasis, the system comprising:

a hemostasis promoting material delivery system containing a
hemostasis promoting material; and

a connector positioned on a distal end of the hemostasis
promoting material delivery system, the connector configured to form a removable

Sub A1
fluid tight seal with an introducer sheath by connecting to a flange of the
introducer sheath.

27. The system of Claim 26, wherein the connector is configured for
connection to an internal flange of the introducer sheath.

5 28. The system of Claim 26, wherein the connector is configured for
connection to an external flange of the introducer sheath.